University Hospitals Plymouth NHS Trust

MATERNITY GUIDELINES

Management of Preterm Labour / Preterm pre labour rupture of membranes (PPROM)

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1. PPROM Definition

Preterm pre-labour rupture of membranes is the confirmed rupture of membranes before 37 weeks gestation of pregnancy and prior to established labour.

2. Management of PPROM

In a woman reporting symptoms suggestive of PPROM, offer a sterile speculum examination to look for pooling of amniotic fluid (this can be performed by a doctor or a midwife).

- if pooling of amniotic fluid is observed, do not perform any diagnostic test but offer care consistent with the woman having PPROM
- if pooling of amniotic fluid is not observed, consider performing an Actim PROM (if available) to diagnose PPROM

If the results of the Actim PROM are positive, do not use the test results alone to decide what care to offer the woman, but consider the clinical condition, medical and pregnancy history and gestational age.

DO NOT perform digital examination if PPROM is confirmed

If the results of the Actim PROM are negative and no amniotic fluid is observed:

- do not offer antenatal prophylactic antibiotics
- explain to the woman that it is unlikely that she has PPROM, but that she should return if she has any further symptoms suggestive of PPROM or preterm labour

If PPROM is confirmed:

- Admit to hospital for at least 48 – 72 hours as high risk of pre-term labour
- Offer maternal corticosteroids for women between 24+0 and 33+6 weeks gestation but consider**ed** offering maternal corticosteroids after 34 weeks gestation dependant on individual obstetric history and assessment.
- Erythromycin 250mg 6 hourly for a maximum of 10 days or until in established **in** labour, whichever **if** sooner. However, it labour establishes give IV antibiotics in line with GBS guideline (see below for recommendations)
- Obtain FBC & CRP for baseline results
- Send HVS for culture and sensitivity and ensure these results are chased
- Perform an ultrasound examination for fetal assessment and presentation
- Inform the Neonatal team and arrange a discussion with the woman and partner Commence MgSO4 if delivery expected within 24 hours – see below, for treatment regime.

On admission to ward:

- 4 hourly maternal observations including BP, pulse, temperature, respiratory rate and saturations, all documented on a maternal MEOWS chart.
- Daily observation of liquor
- Monitor fetal heart rate after 28 weeks gestation using a CTG using the Dawes Redman criteria unless the woman is in established labour. Frequency of fetal monitoring whilst inpatient needs be clarified by the admitting Registrar/Consultant. Monitoring of the fetal heart below 26 weeks gestation must be discussed and clarified at admission.

NB: Tocolytics should be avoided due to the high association with intrauterine colonisation/frank infection in the presence of preterm ruptured membranes. In utero transfer should be at the Registrar/Consultant discretion, particularly if the patient is contracting.

2.1 Management of PPROM in community

If a woman with confirmed PPROM has shown no signs of infection or uterine activity following at least a 48 hour admission, a thorough assessment and review must be made before a decision is made to allow her to go home. Women should be considered for outpatient monitoring of PPROM only after a review/discussion by a Consultant Obstetrician. A documented discussion of risk factors should be recorded in the patient's hand held maternity notes.

All woman should be advised of the signs of chorioamnionitis and asked to observe their loss and monitor their temperature at home on a regular basis, ideally twice a day. The woman should contact Triage and return to the maternity unit if she feels unwell, liquor colour changes, contractions start, bleeding, a reduction in fetal movements, or a temperature develops.

2.2 Ongoing management

The woman will be advised to attend the Day Assessment Ward for ongoing review and assessment. This will include:

- Twice weekly CTG/fetal heart rate monitoring, a full midwifery antenatal assessment incorporating vital signs, CRP and FBC
- USS for growth every 3 – 4 weeks
- Medical review with documented long-term management, if not already done or if any change in the maternal or fetal condition following these assessments.

2.3 Timing of delivery

Delivery should be considered if are objective signs of fetal or maternal infection. The decision should be made inclusive of blood results, maternal observations and fetal heart rate. If the results of the clinical assessment or any other tests are not consistent with each other, continue to observe the woman and consider repeating the tests before making the decision to deliver. The route and timing will depend on the clinical situation.

Routine delivery should be considered between 34 and 37 weeks of gestation dependant on individual cases and management plans.

3. Diagnosis of Preterm Labour

Diagnosis of preterm labour should be categorised according to NICE guidance –

Women may be clinically assessed as in 'suspected', 'diagnosed' or 'established' preterm labour. This guideline excludes multiple pregnancies which has its own guideline. Women reporting symptoms of preterm labour should be offered a clinical assessment to determine whether further diagnostic testing is appropriate or required. Please see Appendix 1 for a flowchart of the NICE guideline for preterm labour and birth /PPROM.

3.1 Fetal Fibronectin (FFN)

See flow chart in **appendix 1** before deciding to perform FFN

Contraindications to Testing

- Vaginal bleeding (microscopic spots of blood cause false positive tests)
- Ruptured membranes (amniotic fluid contains a large amount of Fibronectin)
- Intercourse or vaginal examination with lubricant with the last 24 hours (false positives more likely, although negative result still useful)
- Gestation less than 24 weeks or more than 34+6 weeks

DO NOT use any lubricants during speculum examination, use only tap water if required.

How to perform the FFN is detailed in **appendix 2**.

Occasionally a patient may present without contractions, but with a dilated cervix (silent cervical dilatation) and may warrant therapy. Treatment and testing are gestation dependent and this guideline outlines what should be considered/ offered at different gestations.

4. Baseline Investigations

Baseline investigations should include:

- Full maternal observations and risk assessment

- Assessment of fetal heart rate. A CTG is only to be performed over 26+0 weeks gestation following a discussion with both mother and obstetrician in recognition of the difficulty with interpretation of fetal monitoring at lower gestation. Current NICE guidance states that in the absence of other risk factors intermittent auscultation can be acceptable in preterm labour as per term intrapartum care and in some circumstances no monitoring may be appropriate.
- Speculum examination should be performed with consent and the following tests/observations undertaken:
  - Cervical assessment – if obviously dilated >4cm treat as established preterm labour
  - Exclusion of rupture of membranes or bleeding
  - Microbiology – HVS

Once preterm labour is diagnosed or established the following treatments may be considered:

5. IV antibiotics in labour

All women, irrespective of Group B Streptococcus (GBS) history or status, should be offered Intrapartum antibiotic prophylaxis (IAP), to prevent a possible transmission of GBS, once pre-term labour is confirmed and established. This is regardless of PPROM or intact membranes. The risk of GBS infection is higher with preterm delivery and the mortality rate from infection is increased to 20-30% compared to 2-3% at term.

(See UHPNT intrapartum guidelines Group B Streptococcus for recommended treatment and regimes)

6. Corticosteroids

Betamethasone or Dexamethasone should be given for the following groups of women:

- Those between 24+0 and 33+6 weeks gestation
- Consideration should be given to those between 34+0 and 35+6 weeks gestation particularly where there are concerns or if there is a higher chance of a caesarean section. However, there is limited evidence for the efficacy of steroids for these groups.

Any decision to prescribe corticosteroids for women below 24 weeks gestation must be made following a discussion between the Obstetric Registrar/Consultant and the Consultant Neonatologist, based on individual patient assessment.

Antenatal corticosteroid administration can impair diabetic control; therefore, insulin dependent diabetics requiring steroid therapy should start on an appropriate top up sliding scale.

Dose and Administration:

Two doses of Betamethasone 12 mg intramuscularly 24 hours apart If unavailable Dexamethasone 12mg is an acceptable alternative

Repeat doses of corticosteroids should not be routinely offered but interval since the last course should be considered on an individual basis.

7. Tocolysis

Take the following factors into account when making a decision about whether to start tocolysis*:*

- Whether the woman is in suspected or diagnosed preterm labour between 24 weeks gestation and 33+6 weeks gestation with intact membranes
- Availability of neonatal care or the need to transfer to another unit
- Other clinical features that may suggest that stopping labour is contraindicated, Such as:
  - Evidence of fetal compromise
  - Intrauterine infection
  - Antepartum haemorrhage
  - Any maternal or fetal condition that warrants delivery (e.g. pre-eclampsia)
  - Any maternal medical disorder where chosen tocolytic drug is contra indicated (see below)

7.1 Nifedipine

Oral Nifedipine 20mg should be administered as an initial dose, followed by doses of 10-20mg 3-4 times daily according to uterine activity. This should be continued for a maximum

of 48 hours. A total dose of 60 mg and above has been associated with adverse side effects such as headache and hypotension and should therefore be considered carefully.

The Nifedipine must be discontinued once the patient is in active labour and the MgSO4 has been commenced.

Where Nifedipine is contraindicated Atosiban is an acceptable alternative.

7.2 Atosiban

Please see below for the Atosiban regime:

1. **Loading dose:**
Withdraw 10mls from a 100ml Normal Saline infusion bag (keep infusion bag to one side for use with initial infusion – see step 2). Draw up 0.9mls Atosiban (6.75mg) in a 1ml syringe (**small vial** containing 0.9ml of 7.5mg/ml solution of Atosiban for injection). Add to the syringe containing 10mls of N/Saline. Administer IV as slow bolus injection over minimum time of one minute (may cause nausea if given more quickly).

2. **Initial infusion:**
A high dose infusion of 300 micrograms/min of Atosiban for 3 hours only.

Preparation: Using the Normal Saline infusion bag from Step 1 (with 10mls already removed) add 10mls of Atosiban 7.5mg/ml concentrate (using two 5ml vials). Commence infusion using a Baxter infusion pump set at an initial **rate of 24mls/hr** and the **total volume to be infused set to 72mls**. (This will ensure that the pump alarms after 3 hours, so that the rate can then be reduced – see Step 3)

3 **Maintenance infusion:**
A low dose infusion of 100 micrograms/min Atosiban for up to 45hrs; stop earlier once contractions settle for 4 hours. Most patients are expected to settle in 13 hours.

Preparation: **Reduce infusion rate of initial infusion to 8mls/hr** (there will only be 28mls left in this bag, so set total volume to be infused at 28mls). When the next bag of the maintenance infusion is required, make up as for Step 2 and commence infusion at 8mls/hr, with total volume to be infused at 100mls.

Monitoring for first 3 hours: Half hourly recordings of pulse, B/P and frequency/strength of contractions, hourly temperature and continuous CTG. Frequency of subsequent observations will be decided following review by the obstetric registrar.

8. Magnesium Sulphate

There is evidence to suggest that Magnesium Sulphate ($MgSO_4$) given to mothers shortly before delivery reduces the risk of cerebral palsy and protects gross motor function in those

infants born preterm. The effect may be greatest at early gestations (less than 30 weeks gestation) and is not associated with adverse long-term fetal or maternal outcomes.
$MgSO_4$ should be offered to all women between 24+0 and 29+6 weeks gestation with consideration for administration to women between 30 and 33+6 weeks gestation with at least one of the following

- In established preterm labour
- delivery anticipated within 24hrs
- planned preterm birth

In situations where urgent delivery is necessary because of actual or imminent maternal or fetal compromise, delivery should not be delayed to administer $MgSO_4$.

Ideally it should be commenced at least 4hrs before birth but there may still be a benefit if given for less than 4hrs before delivery. Data on the latest that $MgSO_4$ can be given before delivery in order to be of benefit is not currently available.

In the event that birth does not occur after giving $MgSO_4$ for neuroprotection of the infant, and preterm birth again appears imminent (before 32 weeks gestation) a repeat does of $MgSO_4$ maybe considered at the discretion of the attending health professional.

The regime used for neuroprotection of the fetus is:

Loading dose: 4g $MgSO_4$ as a SLOW BOLUS over 40 minutes (less side-effects)
- Draw up 8ml of 50% $MgSO_4$ solution (4g) followed by 12ml of 0.9% saline into a 50ml syringe
- Mix well
- This will give a total volume of 20ml
- Place the syringe in a syringe driver and run it at 30ml/hr
- The IV infusion will then run over 40 minutes

Maintenance dose: 1g/hr
- Draw up 10ml of 50% $MgSO_4$ solution (5g) followed by 40ml of 0.9% saline into a 50ml syringe
- This will give a total volume of 50ml
- Place the syringe into a syringe driver and run at 10ml/hr

The maintenance infusion should be continued for 24 hours or until delivery (whichever is sooner). It does not need to be continued postnatally (unlike in pre-eclampsia).

During administration of $MgSO_4$, women should be regularly assessed.
A MEOWS chart must be used to record hourly maternal observations of temperature, respiratory rate, pulse and blood pressure, tendon reflexes, fluid intake and urine output. If there are signs of magnesium toxicity (oliguria, respiratory depression or supressed/absent reflexes), a medical review should be requested and if this is not possible the infusion stopped. Resuscitation and ventilator support should be immediately available if needed during administration of $MgSO_4$.

Magnesium toxicity is unlikely if the above regime is followed and serum magnesium levels do not need to be routinely measured. In women with renal compromise, serum magnesium monitoring is recommended.

NB: If urine output is normal there is no need to insert a urinary catheter. Fluid input and output must still be recorded.

Women should be advised that they may experience minor side effects such as flushing, nausea and vomiting, sweating and injection site problems. These adverse effects should not prompt discontinuation of the medication.

Overdose is treated with 10ml of 10% Calcium Gluconate IV over 10 minutes

9. Fetal Monitoring

As previously highlighted the evidence for continuous fetal monitoring (CEFM) in an otherwise uncomplicated preterm labour is concurrent with that of term labourers. Clinicians do, however, need to give careful consideration as to the cause of preterm labour and discuss with the attending obstetrician whether CEFM is indicated. In high risk cases CTG should be used from 26 weeks gestation. Prior to this gestation the decision about fetal monitoring should be made by a senior obstetrician and in some circumstances no monitoring may be appropriate.

Fetal Scalp Electrodes (FSE) should not be used for women under 34 weeks gestation unless the following apply:

- it is not possible to monitor the fetal heart using either intermittent auscultation or CEFM
- it has been discussed and agreed by a senior obstetrician
- the benefits are likely to outweigh the potential risks
- the alternatives (immediate delivery, intermittent ultrasound or no monitoring) have been discussed and are unacceptable to the woman.

A FSE can be considered between 34 and 36+6 weeks gestation where it is not possible to use either external monitoring (either continuous or intermittent).

FBS should not be carried out on women less than 34+0 weeks gestation.
Women between 34+0 and 36+6 weeks gestation should have a discussion about the possible use of FBS, using guidance from the term intrapartum guideline.

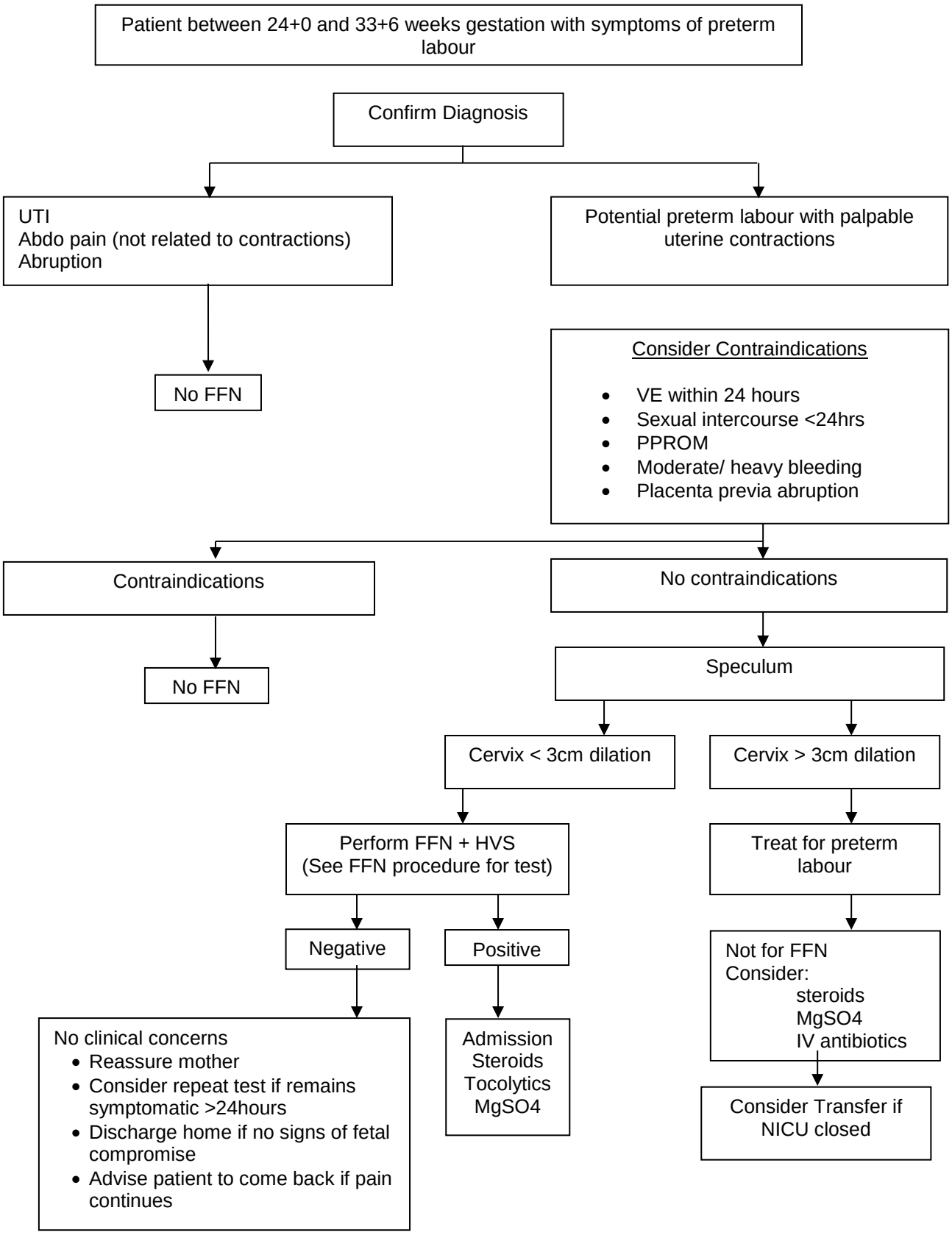
10. Record keeping

It is expected that every episode of care be recorded clearly, in chronological order and as contemporaneously as possible by all healthcare professionals as per Hospital Trust Policy. This is in keeping with standards set by professional colleges, i.e. NMC and RCOG.

All entries must have the **date and time** together with **signature and printed name.**

Appendix 1

Fetal Fibronectin Flow Chart



Appendix 2

Fetal fibronectin testing

Before performing test see indications / contraindications and fetal fibronectin flowchart

- During speculum examination, lightly rotate the supplied swab across the posterior fornix of the vagina for 10 seconds to absorb cervicovaginal secretions (do not saturate the tip as this may invalidate the test).

- Remove swab and immerse tip in buffer solution and gently mix the swab in the buffer solution and remove if the test is to be performed immediately.

  Note: *Refer to transportation and storage notes if test is to be performed at a later time (found in CDS sluice).*

Using fetal fibronectin analyser

- Select Test Patient (1) on Main Menu
- Enter user ID (user initials)
- Enter lot no.
- Enter patient ID
- Insert the Rapid FFN Cassette and press Enter
- Pipette 200µL from the sample collected in the buffer solution into the well of a rapid FFN cassette and press Enter

A positive or negative result will be printed in approx.15 minutes, which must be placed in patient notes.

Appendix 3

Actim® PROM test kit contains all necessary materials and can be stored at:

- Room temperature: 2–25 °C
- Up to 30 °C for 2 months

How to use Actim PROM:

- **Collect sample with or without speculum**

Hold the swab in vagina for 10-15 seconds.

- **Extract specimen**

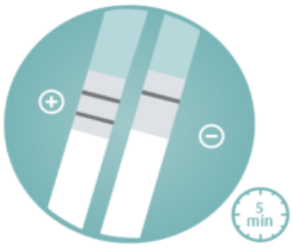
Place the swab in the Specimen Extraction Solution, swirl around vigorously for 10-15 seconds, and discard the swab.

- **Activate the test, step 1**

Place the yellow dip area into the extracted sample and hold it there until you see the liquid front enter the result area.

- **Activate the test, step 2**

Remove the dipstick from the solution and place it in a horizontal position.



- **Interpret results**

A positive result can be read as soon as it becomes visible. Two blue lines = membranes are ruptured.

A negative result should be confirmed at 5 minutes. One blue line = membranes are intact.

Training requirements

Audit of training needs compliance – please refer to TNA policy

Training needs analysis:
Please refer to 'Training Needs Analysis' guideline together with training attendance database for all staff

Cross references

TRW/MMA/POL/271/5 Intravenous Drug Administration Policy
TRW/MMA/POL/265/2 Policy for the Safe and Secure Handling of Medicines

Guideline Development within the Maternity Services
Group B Streptococcus
Reduced fetal movements and Antenatal Cardiotocography (CTG)
Intrapartum Guidelines - Pre-existing and Gestational Diabetes Mellitus (GDM): Management of Pregnancy

Clinical Records Keeping Policy – Derriford Hospital

References

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Kenyon SL, Taylor DJ, Tarnow-Mordi W. Broad-spectrum antibiotics for preterm, prelabour rupture of fetal membranes: the ORACLE I randomised trial. **Lancet** 357: 979-988, Mar 2001.

Royal College of Obstetricians and Gynaecologists Clinical guideline No 1 *(B)*. **Tocolytic drugs for women in preterm labour**. 2002 October.

Royal College of Obstetricians and Gynaecologists Scientific Advisory Committee Opinion Paper 29 August 2011. **Magnesium sulphate to prevent cerebral palsy following preterm birth**. RCOG, London.

NICE guideline (NG25) **Preterm labour and birth**. Published November 2015

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